



# County of Santa Barbara Planning and Development

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Sent via email and U.S Mail

California Energy Commission  
Dockets Office, MS-4  
Re: Docket No. 06-OII-1  
1516 Ninth Street  
Sacramento, CA 95814-5512

RE: Comments on "Developing Statewide Avian Guidelines" Docket No. 06-OII-1

Dear Energy Commission:

Based on my initial review of the Draft Guidelines released on July 17, I would like to comment on what appears to be an error in the document that could undermine its scientific credibility.

## Context for Comments

The Guidelines are intended to be based on the best available science. The order<sup>1</sup> initiating development of the Guidelines states: "*The Energy Commission will develop these guidelines using the best available science and a collaborative approach.*" The executive summary (Guidelines, line 21) states: "*The resulting document provides a science-based approach for assessing the potential impacts that a wind energy project may have on bird and bat species and includes suggested measures to avoid, minimize, and mitigate identified impacts.*" The document lists a distinguished science-advisory committee that participated in developing the Guidelines.

Part of the rationale for requiring bird use and mortality studies is the premise that bird use of an area and bird kills due turbine collisions are correlated, and that risk can be estimated based on patterns of bird use (Guidelines, line 1401 et seq.). Another part of the rationale is that standardized studies are needed to better understand the variables underlying rates of bird kills at diverse wind project sites. The guidelines imply that risk to birds can be assessed using currently available data. Table 1 (Guidelines, line 1469) states that one purpose of bird use counts is "*to provide estimate of potential collision risk*" and that bird use counts should be used "*on all proposed wind energy projects to provide standardized baseline data on bird use and*

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<sup>1</sup> Energy Resources Conservation and Development Commission, Order No. 06-0524-9, May 24, 2006.

*estimate collision risk.*” Appendix G of the Guidelines is apparently meant to demonstrate that statistical analysis of currently available bird use and mortality data from standardized studies of wind farms shows a clear correlation of raptor use to mortality, implying that the correlation can be used to predict risk at proposed new wind projects.

## Comments

1. The data provided in Appendix G do not warrant the statistical inference that raptor mortality is correlated with raptor use. Table 1 and Figure 3 tell basically the same story. There are 2 wind project locations with high raptor use and high mortality and 7 or 8 locations with low raptor use and low mortality. Figure 3 shows a regression of raptor fatalities versus raptor use of the site and reports an R-square value of 90.3%.

It is reasonable to suppose that greater bird use would result in greater mortality, and the data are not inconsistent with this hypothesis. However, the data do not demonstrate this is the case. Data like this (i.e., 2 clusters) suggest that there may be two statistically distinct data populations.<sup>2</sup> There appears to be no basis to assume that the data form a single statistical population. The wide separation between the 2 clusters may be the result of some other causal factor. It is statistically invalid to use a regression in such a case. The high R-square is due to the fact that the regression is basically between 2 (fuzzy) points. If one analyzes the low-mortality cluster separately for correlation of raptor use and mortality, the correlation is very weak and negative (i.e., weak indication of lower raptor mortality with greater use). This result should make one very cautious in inferring that raptor use is the most important explanatory variable.

Behavioral differences among bird species are known to be an important explanatory variable for risk of collision with turbines. Though this issue is mentioned at several points in the Guidelines, it is not discussed adequately in the analysis of raptor mortality in Appendix G.

The bottom line is that the data presented in the Guidelines do not warrant the statistical inference that raptor mortality can be estimated from raptor use. If other data are available (but not included in the Guidelines) that supports a sound analysis demonstrating the correlation, then that data and analysis should be included in the Appendix. If not, then the Guidelines should be edited throughout to remove the premise that bird use is a scientifically demonstrated predictor of mortality based on currently available data. This premise occurs throughout the guidelines, both expressed and implied, and to the extent that it is not scientifically demonstrated, the Guidelines are misleading.

2. The juxtaposition of Figures 1 and 2 of Appendix G suggests visually to that they are comparable. The reader may not notice that the order of project locations along the X-axis is different in the two figures, leading to the false impression that raptor use and fatalities follow the same trend. This figure serves to reinforce the idea that raptor use and mortality are directly correlated, which may be inappropriate based on Comment #1.

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<sup>2</sup> See Bhattacharyya, G.K., and R.A. Johnson, *Statistical Concepts and Methods*, Chapter 12.2 and 12.3, Wiley, 1977; (or refer to a similar text).

3. The “Cautions” statement (Guidelines, line 3985) does not go far enough in disclosing how weak the basis currently is for predicting mortality based on bird use. As noted in Chapter 3 (lines 1803 and 1902), neither radar surveys nor visual methods can currently provide useful predictions of the collision risk to nocturnal birds. Appendix G (line 4-23) states: *“Be aware that the use fatality rate relationship depicted in Figure 3 has only been demonstrated for raptors. Bird use data for songbirds does not reflect the same clear correlation of bird use to bird fatalities as does raptor use data.”* Thus, the current state of the science does not support predictions of songbird mortality; nor, as discussed above, does it appear to offer a statistically sound predictor for raptor mortality.

### Conclusion

The Guidelines give the reader the impression that bird use studies can be used to estimate bird or raptor mortality from collisions with turbines, based on analysis of currently available data. Indeed, this appears to be a basic premise of the Guidelines. But, as discussed above, the Guidelines fail to demonstrate that the premise is statistically sound, and hence cannot be claimed to be based on the best available science. Unless a sound statistical basis can be shown, the Guidelines should be rewritten to emphasize throughout that although standardized bird use and mortality studies cannot presently predict mortality, they are needed to enable better estimates of impacts to birds from future proposed wind projects. I suggest that you retain an independent statistician to review the assumptions and statistical analysis in the Draft Guidelines, to ensure that the Guidelines accurately represent the best available science on avian impacts.

Sincerely,



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cc: Doug Anthony, Deputy Director  
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